1998

INTERMEDIATE

MATHEMATICS

ANCHOR PAPERS

SESSION 2

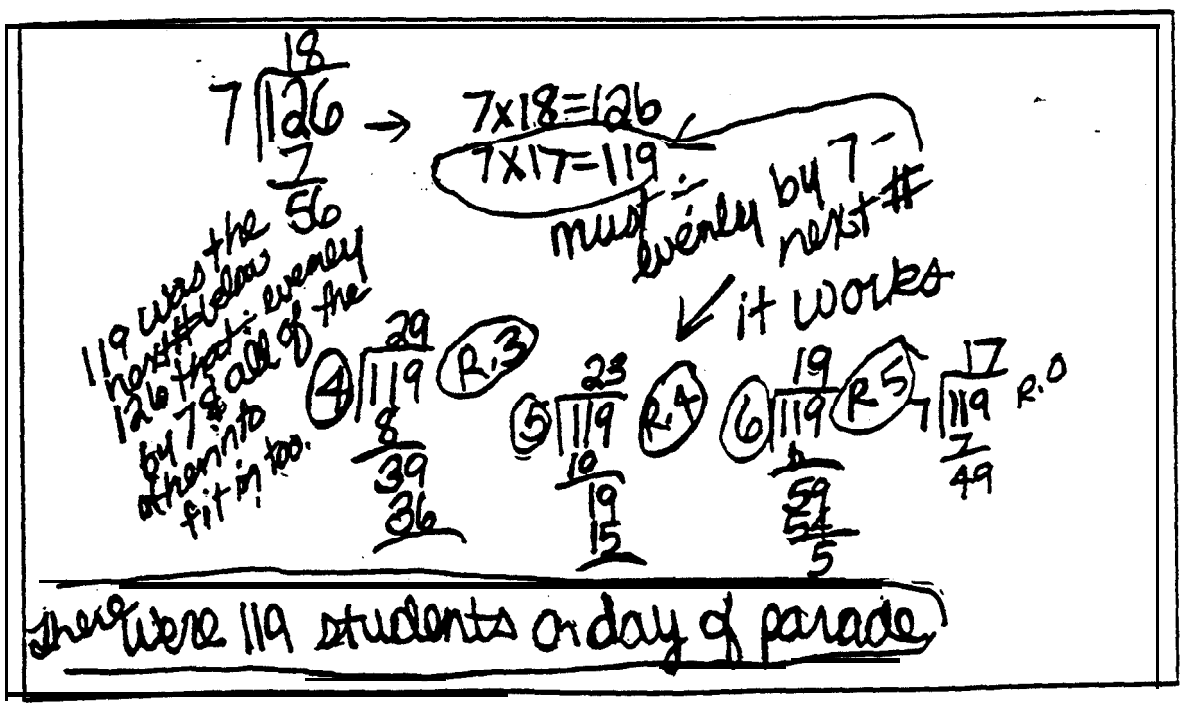
Directions

Show all of your work and write your answers **directly in** this booklet SCORE 4

1 Your local high school marching band is marching in today's state fait parade. The band, composed of 126 students, usually marches in **21** rows of 6 students each. Due to illness, several band members are unable to march in today's parade.

As drum major, **you** must assist the band director in rearranging the students into rows of equal numbers of students. When you tried **4** students in each row, the last row was 1 student **short.** The results were the same when rows of 5 and 6 students were arranged. When **you** arranged the band into rows of **7** students, all rows were complete.

Use the above information to determine how many students showed up to march in the parade. In the box below, expiain how you found the number of students that were present on the day of **the** parade.



175443

Go On

MISSOURI MATH
FORM B
GRADE 8

ITEM 1/ SESSION 2	*ANCHOR*	*SCORE POINT 4*

Student 's response fully addresses the performance event
Effectively communicates all steps of the solution

- *Determines which multiple meets the requirement of one student short in each row (119 ÷ 4 = 31 r2, 119 ÷ 5 = 23 r4, 119 ÷ 6 = 19 r5)*
- *Gives a multiple of 7 (126 ÷ 7 = 18)*
- *Shows how they arrived at 119 (I26 - 7 = 119)*
- *Student clearly communicates process-119 was the next # below 126 that ÷ evenly by 7 and all of the other into fit in too*

40

SCORE 3

Directions

Show **all** of your work and **write** your answers **directly** in this booklet

Your **local** high **school** marching band is **marching** in today's **state** fair parade. The band, composed of **126** students, **usually marches** in **21** rows of **6** students each. Due to illness, **several** band members are **unable** to march in today's parade.

As drum major, you **must assist** the band **director** in rearranging the students into **rows of equal numbers of students. When you tried 4 students in each row, the last** row **was** 1 student **short. The results** were the **same when rows** of **5** and 6 **students** were arranged. **When** you **arranged the band into rows of 7 students, all** rows were complete.

Use the **above** information to determine how many **students** showed up to march in the parade. In **the** box **below, explain how you found the** number of students that were present on the day of the parade.

18
7)126
126
−7
119

31 r2
4)126

29r3
4)119
8
39

29 r4
5)119
10
19
15
4

119 students present

19 r5
6)119
6
59
54
5

MISSOURI MATH
FORM B
GRADE 8

ITEM 1/ SESSION 2	*ANCHOR*	*SCORE POINT 3*

Student 's response substantially addresses the ***performance event***
Communicates most steps ***of*** *the solution*

- *Determines which multiple* ***meets*** *the* ***requirement of one*** *student short in each row (119 ÷ 4 = 31 r2, 119 ÷ 5 = 23 r4, 119 ÷ 6 = 19 r5)*
- *Gives a multiple* ***of*** *7 (126 ÷ 7 = 18)*
- *Shows how they arrived at 11 9 (I26 - 7 = 11 9)*

The response fails to

- *Give an explanation* ***of*** *their process*

42

SCORE 2

Directions

Show all of your work and write your answers directly in this booklet

1 **Your local high school marching band is marching in today's state fair parade. The band,** composed of **126 students,** usually marches **in 21 rows of 6** students each. Due to illness, several band members are unable to march in today's parade.

As drum major, you must assist the band **director in rearranging the students into rows of** equal numbers of **students.** When you tried **4** students in each row, the last *row* was 1 student short. The results were **the same when rows of 5 and 6 students were** arranged. When you arranged the band **into rows of 7 students, all rows were complete.**

Use the above information to determine **how many students showed** up **to-march in the parade.** In the box below, explain how you found the number of students that were present on the day of the parade.

7 14 21 28 35 42 49 56 63 70 77 84 91 98 105 112 119

000 3

31 ½

31 2

125 31 + 1

I made a picture to figure it out

119 students showed up

174097

Go On

MISSOURI MATH
FORM B
GRADE 8

ITEM 1/ SESSION 2	ANCHOR	SCORE POINT 2

Student 's response partially addresses the performance event

Communicates some steps on the solution

- *Gives multiples of 7*
- *Determines that there were 1 I9 students present*
- *Gives a partial explanation of the problem--I made a picture to-figure it out--shows the picture*

The response fails to

- *Determine which multiple meets the requirement of one student short in each row*

SCORE 1

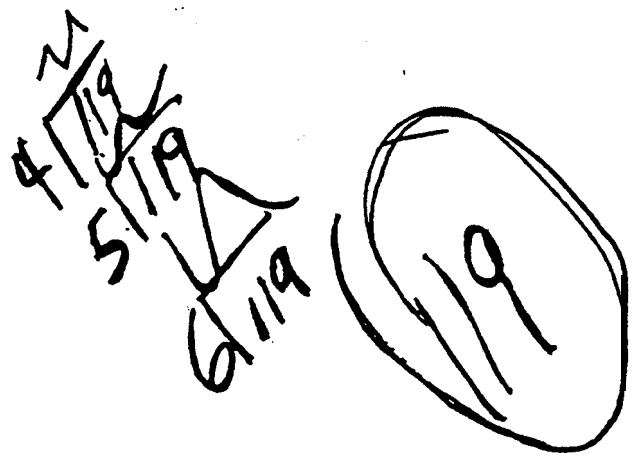
Directions

Show ail of **your** work and write your **answers directly** in this booklet.

Your local high **school** marching **band is marching** in today's **state** fair parade. The band, composed **of 126** students, **usually marches** in **21** rows of 6 students each. Due to **illness, several band** members are **unable to** march ***in*** **today's** parade.

As drum **major, you must** assist **the** band director in rearranging the students into rows of **equal** numbers of students. When **you tried 4** students in each row, the **last** row **was** 1 student **short.** The **results** were the same **when** rows of **5** and 6 students were arranged. **When you** arranged the band **into** rows of 7 students, **all** rows were complete.

Use the above information to **determine** how many students showed up to march in the parade. In the **box below, explain how you** found **the** number of students that were present **on** the day of the **parade.**



MISSOURI MATH
FORM B
GRADE 8

ITEM 1/ SESSION 2	*ANCHOR*	*SCORE POINT 1*

Student 's response minimally addresses the performance event
Communicates few steps of the solution

- *Gives the answer of 119 students*

The response fails to

- *Determine which multiple meets the requirement of one student short in each row.* ***Just showing*** *119 ÷ 4 = , 119 ÷ 5 = , 119 ÷ 6 = . is not enough to earn the student any credit*
- *No work was given*
- *Give an explanation of their process*

SCORE 1

Directions

Show ail **of your work and write** your answers directly in this booklet

1 Your local high school **marching** band is marching in today's state fair parade. The band, composed of 126 students, **usually** marches in **21 rows** of 6 students each. Due to illness, several band members are unable to march in today's parade.

As drum major, you must assist the band director in rearranging the students into rows of **equal** numbers of **students.** When you tried **4** students in each row, the last row was 1 student short. The results were the same when rows of 5 and 6 students were arranged. When **you** arranged the band into **rows** of **7** students, **all** rows were complete.

Use the above information to determine how many students showed up to march in the parade. In the box below, explain how you found the number of students that were present on the day of the parade.

17 • 7 = 119

If you had 17 rows of 7 students. 119 students showed up.

178937

Go On

MISSOURI MATH
FORM B
GRADE 8

ITEM 1/ SESSION 2	*ANCHOR*	*SCORE POINT 1*

Student's response minimally addresses the performance event
Communicates few steps of the solution

- *Gives the answer of 119 students*
- *Gives a multiple of 7--(17 x 7 = 119)*

The response fails to

- *Give an explanation of their process*
- *Determine which multiple meets the requiremenr of one student short in each row*

SCORE 0

Directions
Show **all** of **your** work and write your **answers directly** in this **booklet.**

Your local high school marching band **is marching** in **today's state** fair parade. The band, composed of **126** students, **usually marches** in **21 rows** of **6** students each. Due to **illness, several** band members are **unable** to **march** in today's parade.

As **drum major, you** must assist the band **director** in rearranging the students into **rows of equal** numbers of students. When **you** tried **4** students in each row, the **last row was 1** student **short.** The results were the same **when** rows of 5 and 6 students were arranged. When **you** arranged the band into rows **of 7** students, all **rows were complete.**

Use the above information to determine how many **students** showed up to march in the parade. **In** the **box below,** explain how you found the number of students that were present on the day of the parade.

126 ÷ 7 = 18

18 students were absent

MISSOURI MATH
FORM B
GRADE 8

ITEM 1/ SESSION 2	*ANCHOR*	*SCORE POINT 0*

Other-- Work indicates no mathematical understanding of the task

- *Gives a multiple of 7. but uses the number obtained as the answer to the problem*
- *Shows no understanding of the process*
- *Does not give an explanation of their process*

Each square inch of **honeycomb** contains **25 cells. How many cells would be found . in a** honeycomb that measures **8 inches by 12 inches? In** the **box below, provide the work** that shows how **you arrived** at your answer.

SCORE 2

Correct process

$8 \cdot 12 = 96$

$96 \cdot 25 = 2400$ cells

Correct answer

Exemplary Response

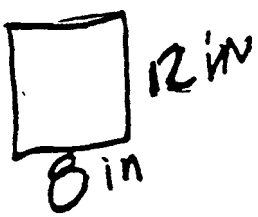
2 Each square inch of honeycomb contains 25 cells. How many cells would be found in a honeycomb that measures 8 inches by 12 inches? In the box below, provide the work that shows how you arrived at your answer.

SCORE 1

$8 \times 12 = 96 \div 25 = 3$

Correct area with process shown

Incorrect answer



2 Each square inch of honeycomb contains 25 cells. **How** many ceils would be found in a honeycomb that measures 8 inches by 12 inches? In the-box below, provide the work that shows how you arrived at your answer.

SCORE 0

(25×8) (25×12)

200 300

Incomplete process

200 + 300 = 500

Incorrect answer

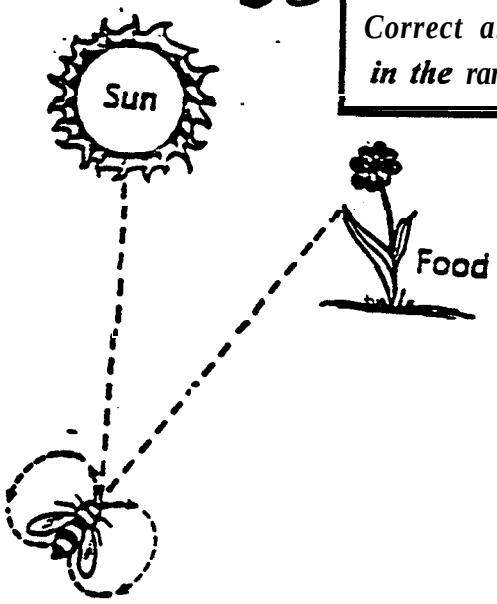
500 cells in a honecomb

3 Use your protractor to help you solve this problem.

SCORE 1

A honeybee shows the location of food to other bees by dancing a figure-eight pattern inside the hive. The imaginary line between the loops of the figure eight indicates the position of the food in relation to the sun, as shown below.

What is the measurement of the angle between the sun and the honeybee's food?



Correct answer-Angle measures in the range of 33° to 37°

Exemplary Response

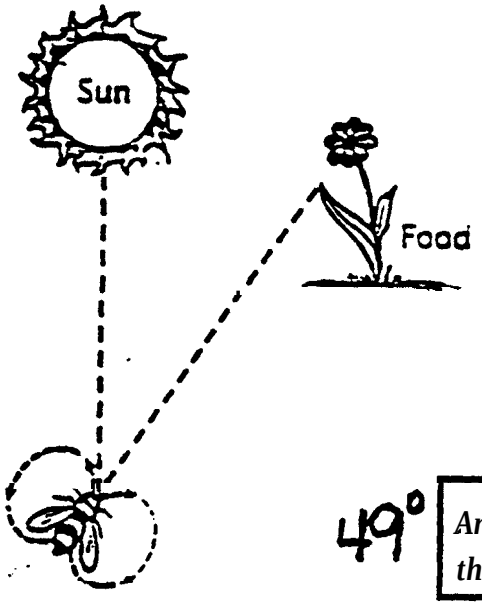
3

Use your protractor to help you solve this problem.

SCORE 0

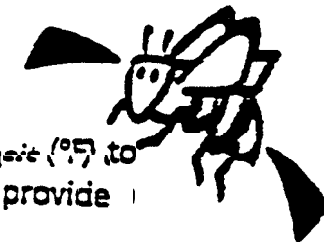
A honeybee shows the location of food to other bees by dancing a figure-eight pattern inside the hive. The imaginary fine between the loops of the figure eight indicates the position of the food in relation to the sun, as shown below.

What is the measurement of the angfe between the sun and the honeybee's food?



49°

Angle measured is not within the acceptable range of 33° to 37°



4

The honeybee must have a body temperature of at least 85° Fahrenheit (°F) to be able to fly. What is this temperature in Celsius? In the box below, provide the work that shows how you arrived at your answer.

SCORE 2

$86°F = X°C$

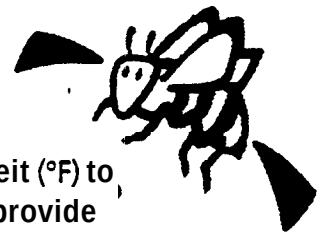
$X = \frac{5}{9}(86° - 32)$ *Correct process*

$X = \frac{5}{9}(54)$

$X = 30$ *Correct answer*

Exemplary Response

Session 2



The honeybee must have a body temperature of at least 86° Fahrenheit (°F) to be able to fly. What is this temperature in Celsius? in the box below, provide the work that shows how you arrived at your answer.

SCORE 1

Correct process

$C = \frac{5}{9}(85-32)$

$\frac{5}{9} \cdot 53 = \frac{265}{9}$

$27.2^{\circ}C$

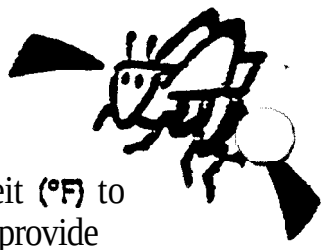
$85 - 32 = 53$

$53 \times 5 = 265$

Error in transcription– wrote 85 instead of 86

$9\overline{)265}$ → 27.2, -18, -65, -63, 2

Error in computation gives wrong answer



4

The honeybee must have a body temperature of at least 86° Fahrenheit (°F) to be abfe to fly. What is this temperature in Celsius? In the box below, provide the work that shows how you arrived at your answer.

SCORE 0

86° Fahrenheit
Celsius

$F = \left(\frac{9}{5}C\right) + 32$

$C = \frac{5}{9}(F - 32) = -64$

$= -64°$

No process

Incorrect answer

The eighth graders at your school decided to create a plan for an outdoor lunch yard where students could eat their lunch during nice weather. Before approaching the principal, the students Made a scale drawing to help them present their idea.

5

Use *your ruler* to help you solve this problem.

The students thought it would be nice to include a fl ower garden in the lunch area. What is the *actual* area of the flower garden? In the box below, provide the work that shows how you arrived at your answer. Be sure to include the unit of measure for the area of the flower garden with your answer.

SCORE 3

1½ inches = 8+4 = 12
2½ inches = 16+4 = 20

12b x 20 h = $\frac{240}{2}$

120 sqft

Correct process

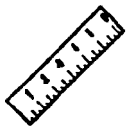
Correct answer

Exemplary Response

Session 2

The eighth graders at your school decided to create a plan for an outdoor lunch yard where students could eat their lunch during nice weather. Before approaching the principal, the students made a scale drawing to help them present their idea.

5



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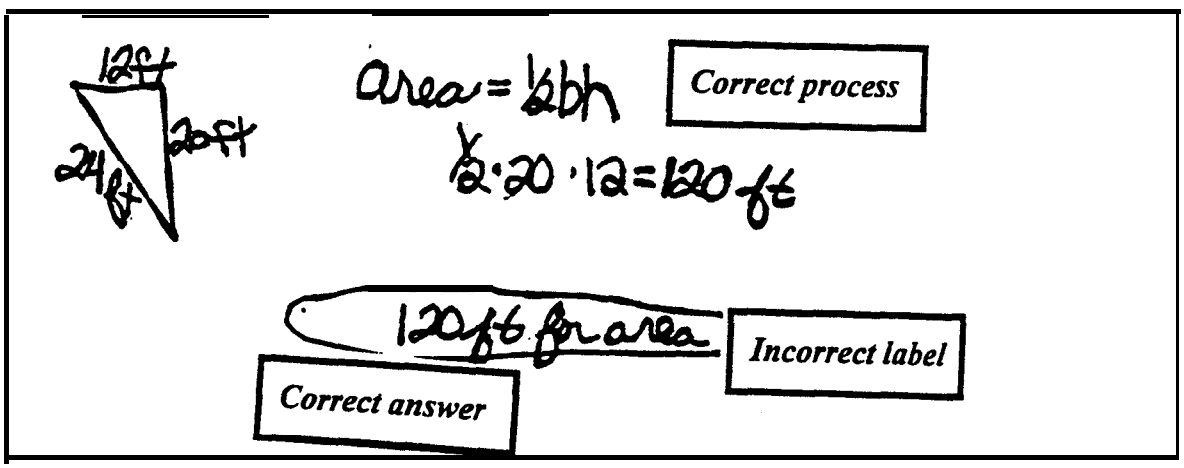
The students thought it would be nice to include a flower garden in the lunch area. What is the *actual* area of the flower garden? In the box below, provide the work that shows how you arrived at your answer. Be sure to include the unit of measure for the area of the flower garden with your answer.

SCORE 2



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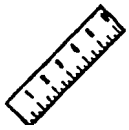
5



Use your ruler to help you solve this problem.

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SCORE 1

8+4=12x
16+4=F 20x
16+8 24

the area will be 1920

One correctprocess shown for that process-conversion of inches to feet

Incorrect answer

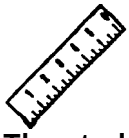
136146

Session 3

61

The eighth graders at your school decided to create a plan for an outdoor lunch yard where students could eat their lunch during nice weather. Before approaching the principal, the students made a scale drawing to help them present their idea.

5



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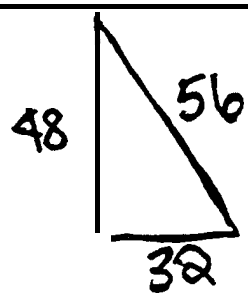
SCORE 0



Incorrectprocess

A=136 ft.

Incorrect answer

185862

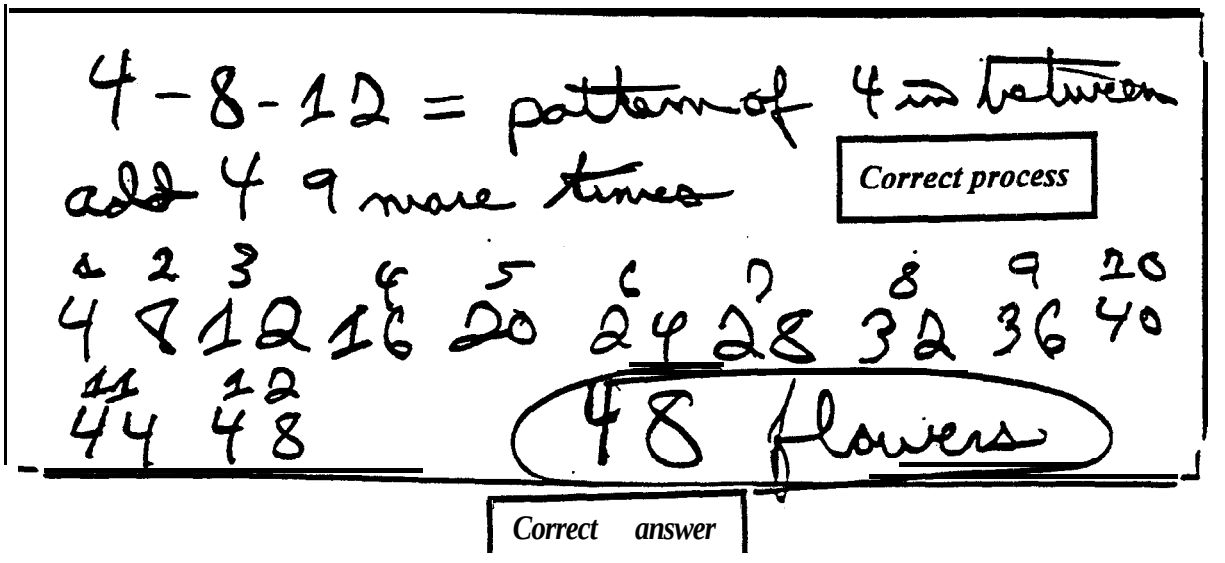
117

Session 2

62

6 The students want to plant flowers in rows to fit the garden's shape. The first row will have 4 flowers, the second row will have 8 flowers, and the third row will have 12 flowers. If the pattern continues, how many flowers will be in the twelfth row? In the box below, provide the work that shows how you arrived at your answer.

SCORE 2

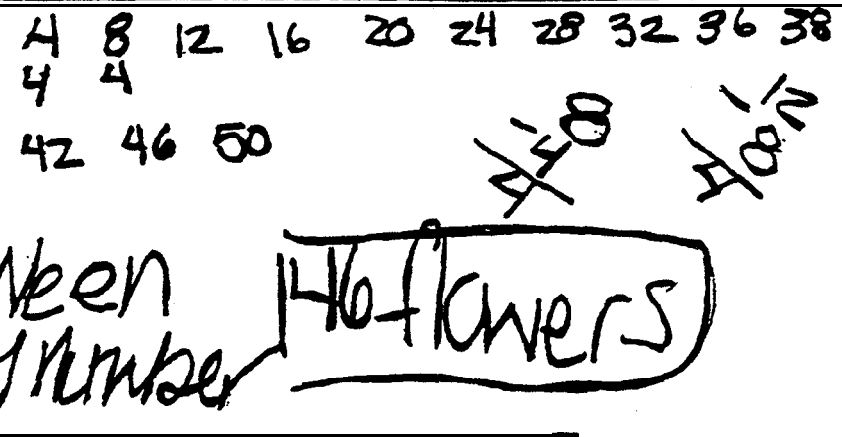


Exemplary Response

The students want to plant flowers in rows to fit the garden's shape. The first row will have 4 flowers, the second row will have 8 flowers, and the third row will have 12 flowers. If the pattern continues, how many flowers will be in the *twelfth* row? In the box below, provide the work that shows how you arrived at your answer.

SCORE 1.

Correct process



Error in computation gives wrong answer-got off track when they added 2 to 36 and went back to adding 4

Session 2

186812

64

6 The students want to plant flowers in rows to fit the garden's shape. The first row will have 4 flowers, the second row will have 8 flowers, and the third row will have 12 flowers. If the pattern continues, how many flowers will be in the ***twelfth*** row? In the box below, provide the work that shows how you arrived at your answer.

SCORE 0

$12-3=9\times4=36+24=60$ Flowers in last row

Incorrect process

Incorrect answer

Go On

Session 2

109762

65

7

SCORE

DEAR Principal,

We put out 165 gallons of garbage and recycled goods each day. We have done research to find out which Garbage can would be cheaper yet still hold enough garbage. Garbage can B is the Best one to get it holds 34 gallons of trash so we only need to get 5, which will cost $69.95. Garbage Can A only hold 30 gallons so you would need to get 6, which would cost $71.94. ($2.00 less). We recomend you get garbage Can B to save money.

Sincerly,
Your loving Students

Correct response

Correct process

Exemplary Response

7

SCORE 2

Dear Principal,

Hello!

Correct recommendation

we the eighth-grade students, think you should consider "Garbage can B"! We think this because this can holds 4 more gallons than can A, and with can a you would have to buy 6 garbage to hold 165 gallons of trash, but with can B you only have to buy 5 cans.

Thank

Partial justification–figured out they would need 6 of trash can A and 5 of trash can B

#7

SCORE

Garbage can B.
It holds more, it's plastic and
it's bigger but we have to
pay more.

Correct recommendation

7

SCORE 0

Dear Principal,

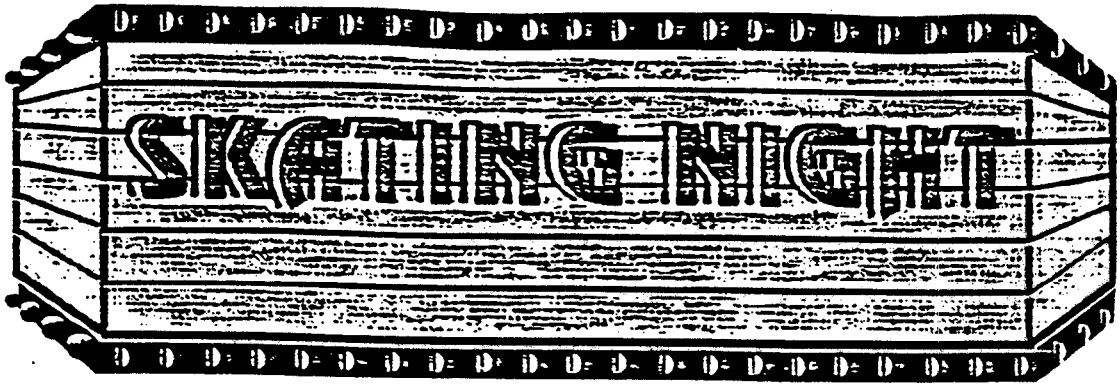
This is a letter regarding the choice of which garbage can to use for the outdoor lunch yard. We recommend you use Gabage Can A. It is cylinder in shape, 3ft tall w/a 1ft. radius. It will hold 30 gallons + is made up of galvanized steel. the cost per trash can is $11.99. Garbage can B will hold 11 gallons more, but it is made of plastic which would probably not hold up as well a steel. I hope we have made a good decision for the lunch yard!

Thanks,

Incorrect answer

Justification given was insufficient to score– no matlematical understanding of why trash can B should be chosen

Repeats information given– no mathematical understanding of the task



Directions

Numbers **1 through 6 are** about a school skating **night** Show ail of your work **and write** your answers **directly** in **this booklet.**

a

The **student council** at **your school** wants to sponsor a **family** skating night at a local roller rink. The **skating night** is going to be a fundraiser to **help purchase** new sports equipment for the **school. The** students have discussed how to encourage ticket safes so that there **will** be a good turnout for the **event.**

They decide that each of the 5 student officers **will call** 5 eighth graders to tell **them** about the skating **night.** Each of those eighth graders **will call 3 seventh** graders. Assuming that **no person** is **called** more than once, **how** many **seventh** graders **would** be called? In the-box **below,** provide the **work** that shows how **you** arrived at **your answer.**

SCORE 2

5 x 5 = 25 eighth graders

25 x 3 = 75 7th graders

Correct process

Correct answer

Exemplary Response

Directions

Numbers 1 through 6 are about a school skating night. Show all of your work and write your answers directly in this booklet

8 **The student council at your school wants to sponsor a family skating night at a local roller rink. The skating night is going to be a fundraiser to help purchase new sports equipment for the school. The students have discussed how to encourage ticket sales so that there will be a good turnout for the event.**

They decide that each of the 5 student officers will call 5 eighth graders to tell them about the skating night. Each of those eighth graders will call 3 seventh graders. Assuming that no person is called more than once, how many seventh graders would be called? In the box below, provide the work that shows how you arrived at your answer.

SCORE 1

5 × 5 = 25

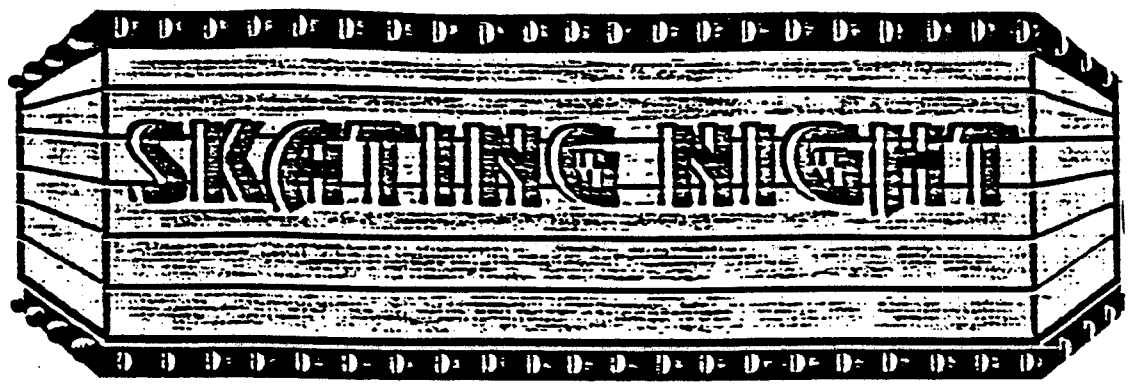
25 × 3 = 625

625 7th graders

Correct process

Error in computation gives wrong answer

155660



Directions

Numbers 1 through 6 are about a school skating night. Show all of your work and write your answers directly in this booklet.

a

The student council at your school wants to sponsor a family skating night at a local roller rink. The skating night is going to be a fundraiser to help purchase new sports equipment for the school. The students have discussed how to encourage ticket sales so that there will be a good turnout for the event.

They decide that each of the 5 student officers will call 5 eighth graders to tell them about the skating night. Each of those eighth graders will call 3 seventh graders. Assuming that no person is called more than once, how many seventh graders would be called? In the box below, provide the work that shows how you arrived at your answer.

SCORE 0

5
x 3
15 seventh graders

Incomplete process

Incorrect answer– 15 seventh graders

5 = 8th graders
3 = 7th graders each

3+3+3+3+3